

# TWO NEW MANGROVE-DWELLING PORCELLANID CRABS, OF GENUS *PETROLISTHES* STIMPSON, FROM TROPICAL AUSTRALIA (CRUSTACEA: DECAPODA: ANOMURA)\*

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## ABSTRACT

Two anomuran crabs of the family Porcellanidae are described from tropical Australian waters: *Petrolisthes limicola* sp. nov. from the Northern Territory, and *P. haplodactylus* sp. nov. from the Northern Territory and Queensland. Both species inhabit muddy substrates around mangroves. They and four related Australian species are compared in a key.

**KEYWORDS:** Crustacea, Anomura, Porcellanidae, *Petrolisthes*, Australia, Queensland, Northern Territory, mangroves, new species.

## INTRODUCTION

Among porcellanid crabs from the Northern Territory, Australia, sent for identification by Dr A.J. Bruce, were several lots of material that had been collected near or among mangroves and which proved to belong to two closely related but distinct species, both undescribed. Two lots of one of these species, without habitat data but presumably from mangrove areas as well, had been found earlier among unidentified material in the collections of the Australian Museum. On the basis of this material the new species are described below.

Only one measurement, the carapace length (cl), is given for each specimen, with the exception of holotypes for which the carapace breadth (cb) is also cited. Material from the Northern Territory, including the holotypes, is deposited in the Northern Territory Museum of Arts and Sciences (NTM), Darwin. Material from Queensland is deposited in the Australian Museum (AM), Sydney.

## SYSTEMATICS

### *Petrolisthes limicola* sp. nov.

(Figs 1, 2)

**Type material.** HOLOTYPE — NTM Cr. 001699/A, ♀ cl 9.8mm, cb 9.4mm, Stn CH/1, Creek "H", Darwin Harbour (East Arm), Northern Territory, 12° 34.2'S 130° 56.3'E, 17.v.1984, low water at springs level, in mangroves, coll. J.R. Hanley. PARATYPES —

NORTHERN TERRITORY: NTM Cr. 001699/B, 3♂ cl 5.5 to 7.8mm, 2♀ both cl 6.7mm, same data as holotype; NTM Cr. 003590, ♂ cl 3.7mm, Stn CH/6, same locality, 28.viii.1985, medium low water, mangrove lined creek, coll. R. Hanley; NTM Cr. 005022, ♀ ov. cl 8.2mm, Stn CP/V5C, West Bay, Port Essington, Cobourg Peninsula, 14.ix. 1985, medium low water, mudflats in front of mangroves, coll. R. Hanley, C.W. Russell, and M. Burke.

**Additional material.** NTM Cr. 003716, 1 ♂ cl ca 5.8mm, Stn CH/2, Creek "H", Darwin Harbour (East Arm), 12° 34.2'S 130° 56.3'E, 31.x.1984, 4 metres, mangrove creek, coll. R. Hanley; NTM Cr. 003077, 1♀ cl 4.8mm, Stn CH/4, same locality, 4.ii.1985, low water at springs, mangrove *R. stylosa* zone, coll. R. Hanley.

**Description.** Carapace (Fig. 1) slightly longer than broad. Frontal region slightly deflexed; front rather broad, sinuously triangular; median lobe well developed, rounded at tip, usually with faint median groove; lateral lobes scarcely projecting, oblique. Orbits rather shallowly concave, oblique; outer orbital angle weakly produced, unarmed. Dorsal surface with faint transverse rugae posterolaterally, otherwise nearly smooth; grooves defining various regions usually inconspicuous. Lateral margins

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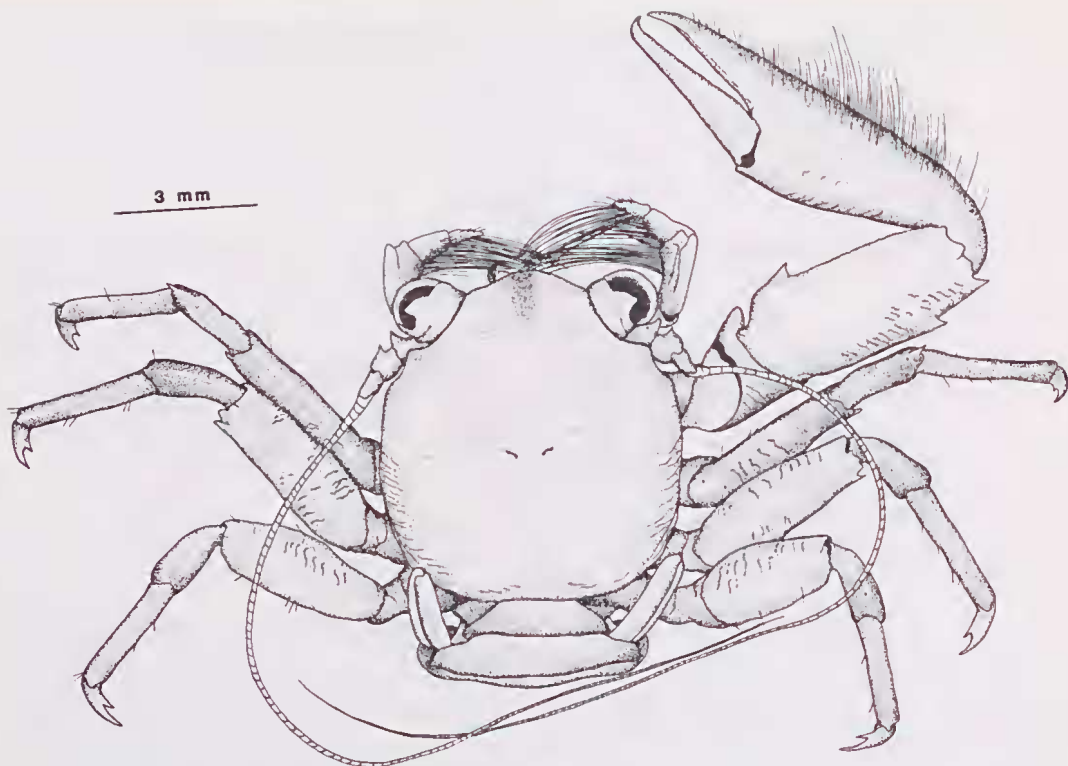


Fig. 1. *Petrolisthes limicola* paratype ♀, NTM Cr. 001699/B. Drawn by Rafael Lemaitre.

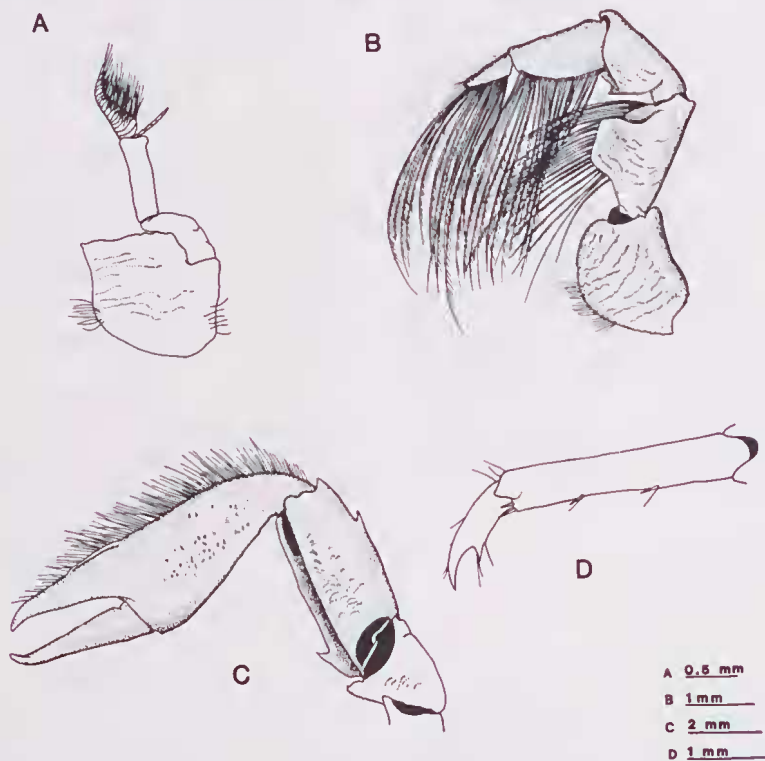


Fig. 2. *Petrolisthes limicola*: A, antennule, left outer view; B, outer maxilliped, C, left cheliped, inner view; D, dactyl and propodus of right walking leg, ventral view. Drawn by Rafael Lemaitre.

subparallel or slightly convex, strongly cristate. Carapace devoid of setae.

Basal segment of antennular peduncles (Fig. 2A) without prominent lobes or spines anteriorly. First movable segment of antennal peduncles with anterior margin produced into prominent spine-tipped tooth; second with sharp subproximal or submedian spine on anterior margin; third unarmed; flagellum very long, non-setose or with minute bristles at distal end of each article. Outer maxillipeds (Fig. 2B) with ischium and merus rugose; mesial meral lobe subquadrate.

Merus of chelipeds transversely rugose on dorsal surface; inner margin with prominent rounded lobe. Carpus over twice as long as broad; dorsal surface nearly smooth, with faint, obliquely transverse striations; inner margin minutely crenulate, with sharp, well developed tooth near proximal end, rest of margin unarmed and nearly straight; outer margin slightly convex, with strong spine at distal end and another on distal third of margin. Dorsal surface of palm slightly convex, without median longitudinal ridge; outer margin and that of fixed finger thin, minutely crenulate; dorsal surface near outer margin with fringe of long, fine setae. Dorsal surface and margin of dactyl minutely granulate. Fingers hooked near tip, dactyl passing under pollex; inner side of fingers (Fig. 2C) non-setose.

Walking legs slender, nearly smooth. Merus with transverse rugae on outer surface; with few scattered setae; legs 1 and 2 with strong posterodistal spine, leg 3 unarmed. Carpus with few scattered setae; leg 1 with strong anterodistal spine, legs 2 and 3 unarmed. Propodus (Fig. 2D) with scattered setae; posterior margin with two movable spines plus pair at distal end. Dactyl long and slender, with scattered setae; posterior margin produced medially as strong tooth tipped with sharp corneous spinule, thence abruptly narrowing distally to form long, curved claw.

Abdomen smooth. Telson with seven plates.

**Variations.** In one female paratype (NTM Cr. 001699/B) the inner margin of the carpus of the right cheliped bears a second tooth on its proximal half. The outer margin of the same carpus has two closely set spines, instead of a single spine, on its distal third. The spinulation of the left cheliped is normal.

**Etymology.** From Latin "limicola", a mud-dweller: a noun in apposition.

**Remarks.** The specimens from Stns CH/2 and CH/4 are not included in the type series because of their poor condition: the first has a crushed carapace and the second lacks both chelipeds. A female paratype from Stn. CH/1 is parasitized by a rhizocephalan.

In the structure of the dactyl of the walking legs *P. limicola* resembles an eastern Pacific species, *P. zaca* Haig, which inhabits mangrove areas in Costa Rica and Panama. Aside from that character it shows no close relationship to *P. zaca*, in which the carapace has an epibranchial spine on either side, the carpus of the chelipeds is armed with three or four teeth on the inner margin and a row of spines on the outer margin, and the merus of the walking legs bears spines anteriorly (Haig 1968: 63, Fig. 2).

***Petrolisthes haplodactylus* sp. nov.**  
(Figs 3, 4)

**Type material.** HOLOTYPE — NTM Cr. 001355/A, ♂ cl 4.9mm, cb 4.5mm, Mickett Creek, Darwin, Northern Territory, 12° 23.0'S 130° 56.7'E, 30.vi.1982, muddy mangrove creek, coll. P. Davie. PARATYPES — NORTHERN TERRITORY: NTM Cr. 001355/B, ♀ cl 4.4mm, same data as holotype; NTM Cr. 004599, ♀ ov. cl 5.3mm, Stn CP/V5, West Bay, Port Essington, Cobourg Peninsula, 14.ix.1985, medium low water, mudflats in front of mangroves, coll. R. Hanley and M. Burke. QUEENSLAND: AM P.3830, 2♀ cl 5.1 and 5.3mm, Finches Bay, Cooktown, coll. A.R. McCulloch; AM P.837, 1♂ cl 6.2mm, 2♀ cl 5.4 and 7.3mm, Fraser Island, registered vii.1908, "Collection Kirton".

**Description.** Carapace (Fig. 3) as long as, or slightly longer than broad. Frontal region slightly deflexed; front rather broad, sinusously triangular; median lobe well developed, rounded at tip, without median groove; lateral lobes scarcely projecting, nearly transverse. Orbits shallowly to rather deeply concave, oblique; outer orbital angle weakly produced, unarmed. Dorsal surface with transverse rugae posterolaterally, otherwise nearly smooth; surface slightly uneven, areas well defined. Lateral margins subparallel or convex, strongly cristate. Carapace without setae except for occasional



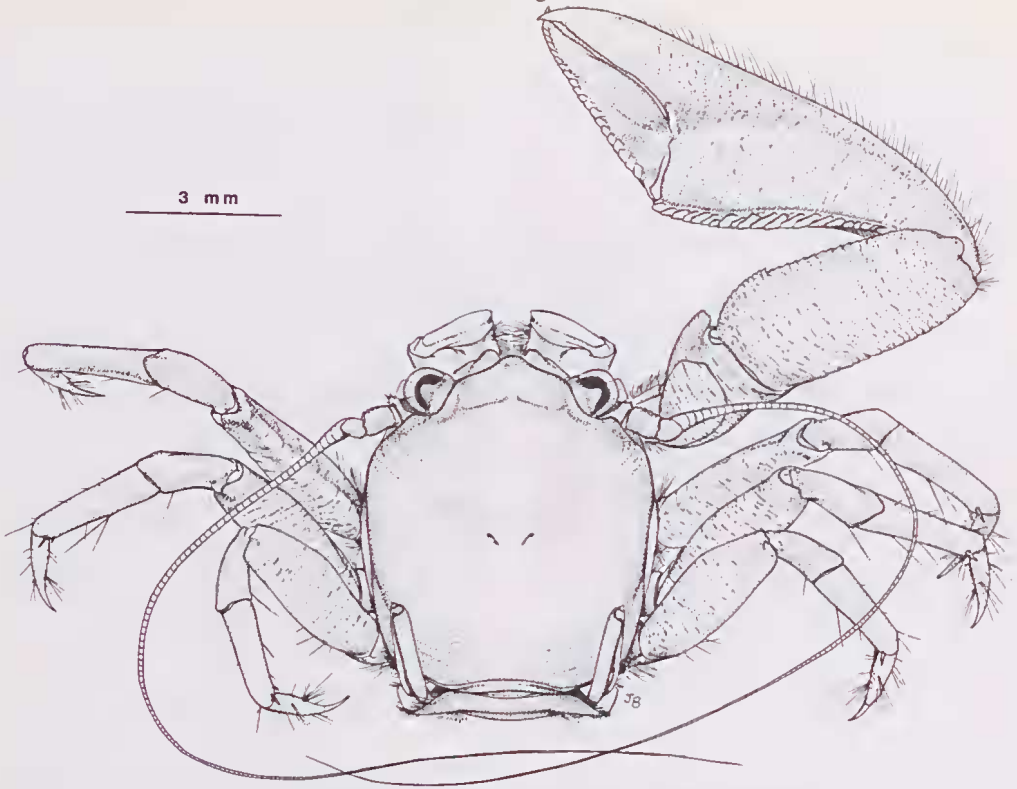


Fig. 3. *Petrolisthes haplodactylus* paratype ♂, AM P.837. Drawn by Jerry Battagliotti.

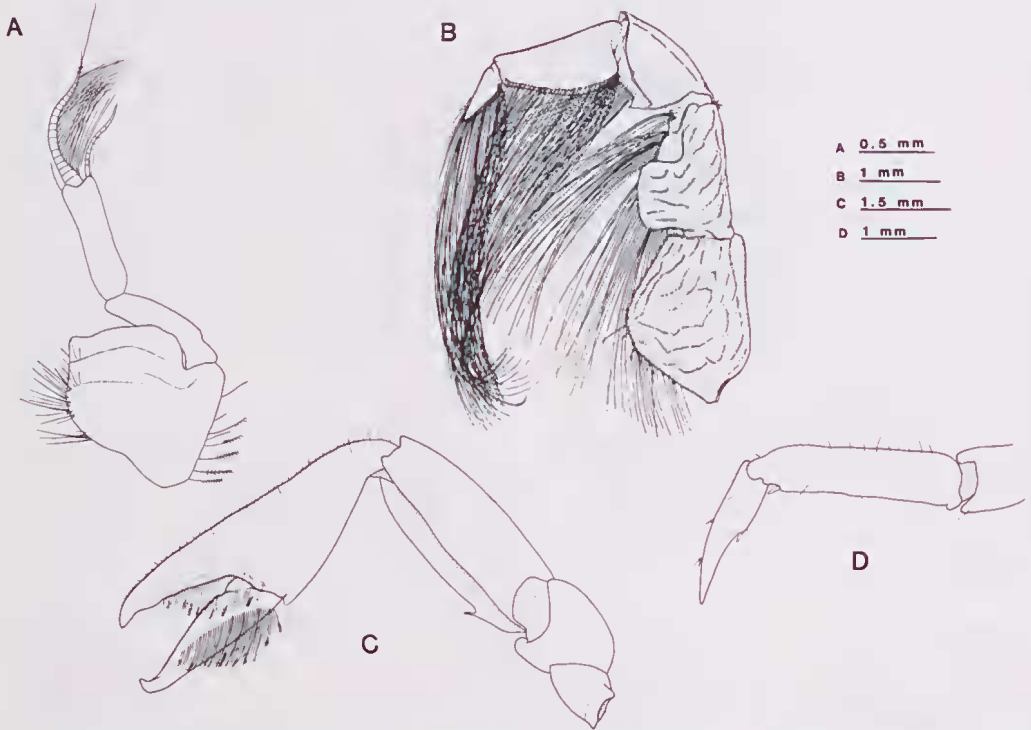


Fig. 4. *Petrolisthes haplodactylus*: A, antennule, left outer view; B, outer maxilliped; C, left cheliped, inner view; D, dactyl and propodus of right walking leg, ventral view. A, C, and D drawn by Frances Runyan; B drawn by Jerry Battagliotti.

occurrence of small, inconspicuous tuft on frontal margin.

Basal segment of antennular peduncles (Fig. 4A) without prominent lobes or spines anteriorly. First movable segment of antennal peduncles with anterior margin produced into small, pointed or rounded lobe; second and third segments unarmed; flagellum very long, non-setose or with few minute bristles at distal end of each article. Outer maxillipeds (Fig. 4B) with ischium and merus rugose; mesial meral lobe subquadrate.

Merus of chelipeds with faint transverse rugae dorsally; inner margin with prominent rounded lobe. Carpus over twice as long as broad; dorsal surface nearly smooth, with faint, obliquely transverse striations; inner margin minutely crenulate, with single small tooth proximally, rest of margin unarmed and nearly straight; outer margin slightly convex, with small spine at distal end, otherwise unarmed. Dorsal surface of palm with distinct median longitudinal ridge; outer margin and that of fixed finger thin, minutely crenulate and with fringe of long and short setae. Dorsal surface and margin of dactyl obliquely rugose. Fingers hooked near tip, dactyl passing under pollex; inner side of fingers (Fig. 4C) with long tuft of fine, closely set setae.

Walking legs slender, nearly smooth. Merus with transverse rugae on outer surface; with few scattered setae; posterodistal angle unarmed on all legs. Carpus with few scattered setae; no anterodistal spine on any legs. Propodus (Fig. 4D) with few scattered setae; posterior margin unarmed except for pair of long, slender movable spines at distal end. Dactyl long and slender, with scattered setae; distal half of posterior margin abruptly tapering to form long, curved claw; point where narrowing begins marked by minute spinule, this concealed by sparse tuft of long, flexible bristles.

Abdomen smooth. Telson with seven plates.

**Etymology.** From Greek "haploos", single or simple, and "dactylos", a finger or toe, referring to the form of the dactyl of the walking legs.

**Remarks.** The two species described in this paper are the only Indo-west Pacific members of the genus *Petrolisthes* that lack a row of three or more spines on the posterior margin of the dactyl of the walking legs. They are

closely related and occupy similar ecological niches, but differ consistently in several details. *P. haplodactylus* may be distinguished from *P. limicola* by the following characters:

**Antennal peduncle:** The anterior margin of the first movable segment is produced into a small lobe, and the anterior margin of the second movable segment is unarmed. In *P. limicola* the first movable segment is produced anteriorly into a strong tooth and the second bears a spine.

**Carpus of chelipeds:** The outer margin is unarmed except for a small spine at the distal end. *P. limicola* has two strong spines on the outer margin.

**Chela:** The dorsal surface of the palm bears a median longitudinal ridge, and there is a long, thick tuft of setae on the inner side of the fingers. Both ridge and tuft are absent in *P. limicola*.

**Walking legs:** The merus and carpus of all three pairs of legs are unarmed, the posterior margin of the propodus is unarmed except for a pair of spines at the distal end, and the posterior margin of the dactyl has a minute median spinule. In *P. limicola*, legs 1 and 2 bear a posterodistal meral spine and leg 1 an anterodistal carpal spine; there are four spines (including the distal pair) on the posterior margin of the propodus; and the posterior margin of the dactyl bears a strong median tooth.

## DISCUSSION

The two species described in this paper belong to a well defined group of Indo-west Pacific *Petrolisthes* in which the carapace is relatively smooth and without spines, and the carpus of the chelipeds bears a single tooth or lobe proximally on the inner margin (one or two additional small teeth or spines are occasionally present in juveniles). The following key will separate the members of this group that are known to occur in Australian waters.

1. Dactyl of walking legs with 3 or more spines on posterior margin ..... 2  
Dactyl of walking legs with a single tooth or spinule on posterior margin ..... 5
- 2(1). Front narrow triangular ..... 3  
Front rather broad, sinuously triangular ..... 4

- 3(2). Carpus of chelipeds with outer margin unarmed except for tooth at distal end ..... *unilobatus* Henderson  
Carpus of chelipeds with 2 or 3 teeth on outer margin in addition to one at distal end ... *elongatus* (H. Milne-Edwards)
- 4(2). Merus of first walking legs with prominent posterodistal spine .....  
..... *kranjiensis* Johnson  
Merus of first walking legs with posterodistal spine very small or absent ..  
..... *teres* Melin
- 5(1). Carpus of chelipeds with 2 prominent spines on outer margin; dactyl of walking legs with strong submedian tooth on posterior margin .... *limicola* sp. nov.  
Carpus of chelipeds with 1 small spine at distal end of outer margin; dactyl of walking legs with minute spinule on posterior margin .....  
..... *haplodactylus* sp. nov.

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## REFERENCE

- Haig, J. 1968. Eastern Pacific expeditions of the New York Zoological Society. Porcellanid crabs (*Crustacea: Anomura*) from the west coast of tropical America. *Zoologica (New York)* **53**: 57-74.

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